



REASoN's

[Research, Education, and Applications Solutions Network]

Metrics Planning And Reporting Working Group Education Subcommittee

November 15, 2006

**Glen Schuster
U.S. Satellite Laboratory, Inc.**



MPRWG Subcommittee Charge:
To Design, Propose and Implement an Efficient
“new generation of metrics”

FOCUS:

Customer Service

Improved Reporting

***for the benefit of Education REASoN Projects and NASA
Education Management in SMD***



The Survey

-- *background 5 minutes*

-- *updating 10 minutes*

The Survey ...for REASoN Projects

What is it?

Bank of Questions used to derive Stakeholder feedback

- *validated by Office of Management and Budget*
- *to be used by Pls, project evaluators*
- *multiple choice, short-answer, open-ended*

What is involved?

Design, Development, Justification, Implementation

Who?





Education Subcommittee Activities

□ SURVEY: Benefits for NASA Program Managers

Allows overall evaluation and comparison of REASoN grants.

Organizes many levels of feedback.

Provides data to analyze effectiveness of individual project activities and products.

Provides data to meet NASA reporting requirements.

Question bank requires only *one* OMB review.

Common toolkit leads to cost savings.

*The Internet will measure participation and
customer service*



Education Subcommittee Activities

□ SURVEY: Benefits for Project Development Teams

Provides *real-time* feedback to project development staff from surveys of teachers, students and other stakeholders.

Reduces evaluation costs; comprehensive support for a fixed price.

Offers survey and question customizations.

Allows for immediate and/or repeated feedback.

Automatically compiles reports and graphs.

Facilitates stakeholder confidentiality.

Demonstrates program effectiveness and identifies areas to improve.



The SURVEY

What is involved?

- Design and Development.
QUESTION BANK for TEN STAKEHOLDERS.
SURVEY QUESTIONS
 - FORMAL EDUCATION
 - 1) Students 2) Teachers 3) Administrators 4) Parents
 - INFORMAL EDUCATION
 - 5) Families/Individuals 6) Virtual Users 7) Community Groups
 - HIGHER EDUCATION
 - 8) Faculty 9) Administrators 10) Students



The SURVEY

- **Development. QUESTION BANK for TEN STAKEHOLDERS.**
 - Survey available at any time for any purpose
 - Question bank: Many multiple choice questions rank 1-5 (very unimportant to very important)
 - 10-50 questions for each of the ten stakeholders
 - Various topics



Education Subcommittee Activities

- Development [and Use]

Who?

PHASE I PROPOSAL: \$8500 (÷ 6 Edu REASoNs)

- Policy One and USM to work with Committee/PIs to make Question bank

PHASE II:

- Creation and Use of Survey Generator by **U.S. Satellite** (planned)
 - Projects generate online surveys for their stakeholders
 - Emails go out to participants/launch survey
 - Collect responses, data available, including pie charts, tables



The SURVEY

PHASE I

➤ Development. SURVEY QUESTIONS.

Example: K-12 / Teacher / TOPIC Answer from 1-5

- Teacher (TOPIC: Content):

I am able to apply my knowledge of Earth data interpretation with my students for the classroom activities.

- Teacher (TOPIC: Methods of inquiry):

Constructivist activities provided background for students to better utilize Earth science data.

- Teacher (TOPIC: Professional development):

I would be open to teacher training online.



The SURVEY

➤ Development. SURVEY QUESTIONS.

Example: K-12 / Administrators / **TOPIC** Answer from 1-5

- Administrator (**TOPIC**: Relevance and Content):
Reform efforts and projects.....Product meeting goals for achievement.
- Administrator (**TOPIC**: Content):
Effectiveness of lessons.....Viable to be included in curriculum.
- Administrator (**TOPIC**: Skills):
Application of important process skills.....Effective us of computers/Internet



The SURVEY

➤ Development. SURVEY QUESTIONS.

Example: Informal Ed / Virtual Users / **TOPIC** Answer from 1-5

- Virtual User (**TOPIC**: Product Use):

Product user-friendly.....useful in personal or professional role....

- Virtual User (**TOPIC**: Information Dissemination):

Change the way you view topics (environment, climate systems, ...)...Level of understanding of the topic



The SURVEY

➤ Development. SURVEY QUESTIONS.

Additional Topics

- Teacher (**TOPIC**: Background):

Preparation and foundation to implement project...education and content...Material lends itself to improving content, sharpening skills

- Teacher (**TOPIC**: Instructional Practices):

Equipped with materials such as computers, probes...Use of dialogue to provoke contradiction to hypothesis.....Make relationships to content and real-life applications, etc...Change in practice—using Earth data

- Teacher (**TOPIC**: Best Practices):

Education material contribute to:

Meeting a learning standard.....Developing a hands-on practice

Integrate science with reading.....Integrate science with math

Teach data gathering....Connect to students' prior learning



The SURVEY

- **Justification.** OMB REQUIREMENTS
 - Privacy Act –
Paper Reduction Act...
 - We submit paperwork to NASA, to submit to OMB



The SURVEY

➤ Challenges.

Survey developer's experience is not Earth science

Contributors way is "the way"

Making the survey truly useable by all

Simplicity !

Support by NASA in development Phase II



Discussion

Release of Survey to SMD community

January 1, 2007

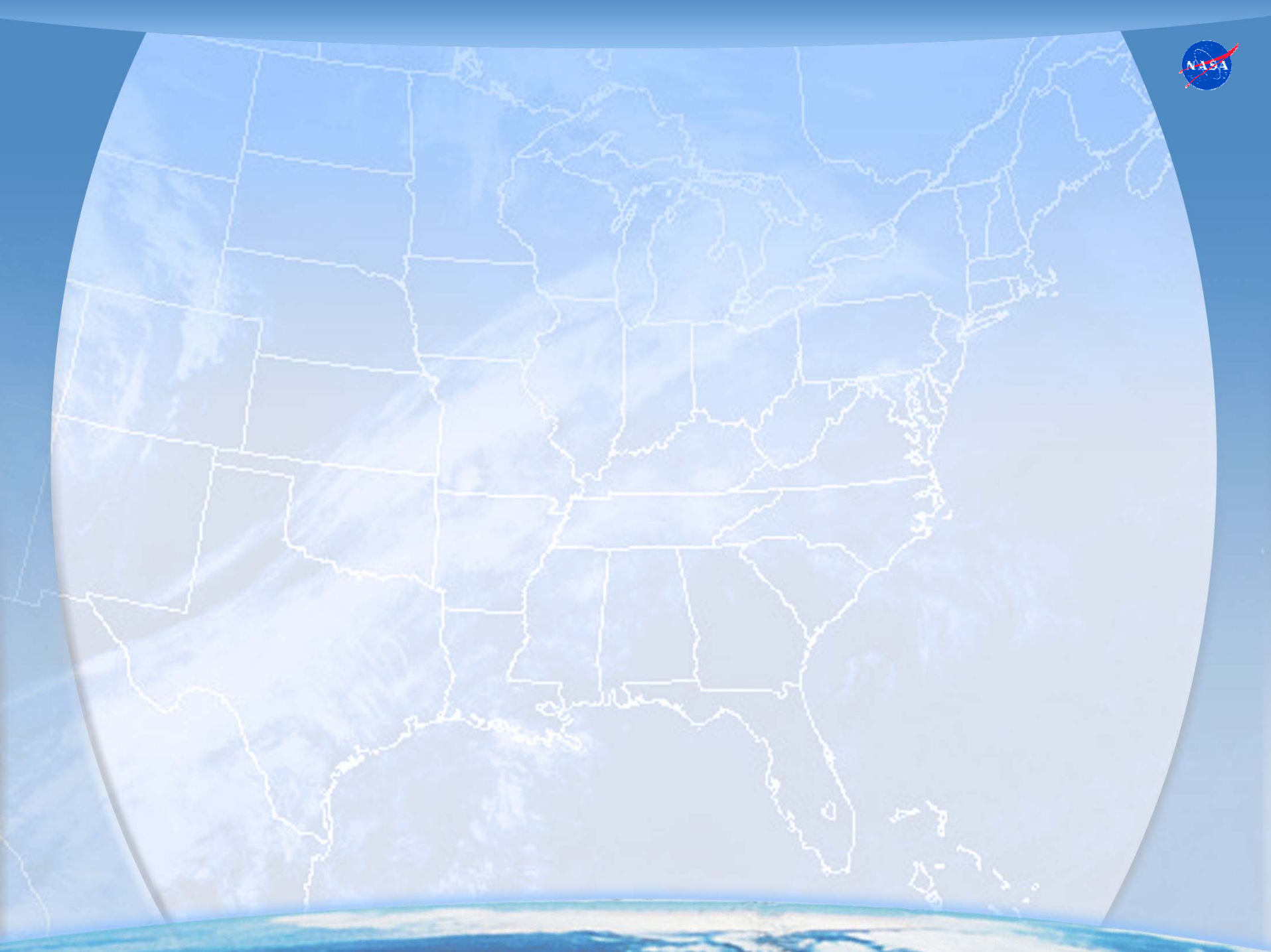
- * Question bank available for review
- * Solicit feedback / propose additional questions...3-5 weeks
- * Changes made by February 2007
- * Submit to OMB in March 2007
- * 6-7 Weeks for Tool Development
- * *Working for Years 4-5...*
- * *Model for other REASoNs*



gschuster@us-satellite.net

(914) 921-5920 x201

*32 Elm Place 1st Floor
Rye, NY 10580*





Overview

□ GOAL: New Generation of Education METRICS

- **Address** NASA reporting requirements and efficiently provide QUANTITATIVE and QUALITATIVE data for REASoN projects and NASA SMD-Earth Education
- **Serve** Education REASoN projects and ultimately NASA SMD Education

□ Meeting NASA/PI Requirements:

What is needed? *Three Components*

- Quantitative Metrics Requirements
- Reporting Tool [NEEIS, Office of Technology] Re
- Surveys in Education

□ Scope of Work

- Teleconferences and Working Sessions, Meetings [3 + others]
- Community Input and Buy-in for Future and Expanded Use by SMD
- **PROPOSED WORK DISCUSSION -END**



Overview

□ GOAL: New Generation of Education METRICS

ADDRESS NEEDS

SERVE NASA/PIs

➤ Quantitative Data Collection

NASA Numbers on: the Users, the Stakeholders, the Customers

➤ Qualitative Data Collection

Events, Milestones, Accomplishments, Impact Metrics, Survey Data



Overview

□ Meeting NASA/PI Requirements: Three Components

➤ #1 Quantitative/Qualitative Data*

"Education #10"

➤ #2 Qualitative Data Reporting Tool

➤ #3 Qualitative Data Surveys

*possible overlap



#1 Quantitative/Qualitative Data

"Education #10" with input from P. Coble, M.Y. Wei

- Specific Audience
- Communication Method*
- Existing Tools or New Tools [immersive, viewer, etc.]*
- Type of Product
- Presentations/Press/Publication*
- Indicators of Success*



#1 Quantitative/Qualitative Data

- Specific Audience

- K-12 -

Teachers/Faculty, Students, Administrators, Parents

- Number of Teachers
- Which Subject/Discipline/Course Taught
- Which Grade Level
- Generalist/Specialist
- Demographics and/or Underrepresented Audiences
City, Rural, Special Education, Limited English Proficiency



#1 Quantitative/Qualitative Data

- Specific Audience

- K-12 -

- Teachers/Faculty, **Students**, Administrators, Parents

- Number of Students
 - Amount of time/days working with the Project
 - Demographics and/or Underrepresented Audiences
City, Rural, Special Education, Limited English Proficiency



#1 Quantitative Data

- Specific Audience

- K-12 -

- Teachers/Faculty, Students, **Administrators, Parents**

- Numbers, based on interaction



#1 Quantitative Data

- Specific Audience

- Post Secondary -

Faculty, Students, Administrators

- Numbers of Instructors, or Students, or Administrators
- Which Subject/Discipline/Course Taught
- Demographic Audience [HBCUs, HSIs, TCUs, OMI, etc.]



#1 Quantitative Data

- Specific Audience

- Post Secondary -
Faculty, **Students**, Administrators
- Numbers of Students
- Amount of time/days working with the Project
- Demographic Audience [HBCUs, HSIs, TCUs, OMI, etc.]



#1 Quantitative Data

- Specific Audience

- Informal Science -

Families/Individuals, Virtual Users, Community Groups

- Number of visitors
- Demographic and/or Underrepresented Audience [City, Rural, Special Ed., Limited English Proficiency, Other] including age breakdown



#1 Quantitative Data

- Specific Audience

- Informal Science -
Families/Individuals, **Virtual Users**, Community Groups
- Educators or Public
- Numbers or Visitors
- Demographic and/or Underrepresented Audience [City, Rural, Special Ed., Limited English Proficiency, Other] including age breakdown



#1 Quantitative Data

- Specific Audience

- Informal Science -
Families/Individuals, Virtual Users, **Community Groups**
- Educators or Public
- Numbers or Visitors
- Demographic and/or Underrepresented Audience [City, Rural, Special Ed., Limited English Proficiency, Other] including age breakdown



#1 Quantitative/Qualitative Data

- Specific Audience
- Communication Method*
 - In-person Active Internet
 - Passive Internet [web-site access]



#1 Quantitative/Qualitative Data

- Specific Audience
- Communication Method*
- Existing Tools or New Tools
[immersive, viewer, etc.]*

- Type of Product

Data	Enhanced Data	Training (service)
Career Activities	Public Engagement	
Educational Materials	Services/data access	



#1 Quantitative Data

- Specific Audience
- Communication Method*
- Existing Tools or New Tools [immersive, viewer, etc.]*
- Type of Product
- Presentations/Press/Publication*
- Indicators of Success*



#1 Quantitative/Qualitative Data

Indicators of Success*

Formal Education, Informal Education



#1 Quantitative/Qualitative Data

Indicators of Success*

Formal Education, Informal Education

- Students
 - Classroom or other artifacts
 - Pictures *with NASA release forms*
 - Shared Work *contests, online, portfolio*
 - Other
- Teachers/Faculty/Administrators
 - Evidence of lasting impact from Project/Product
 - Systemic change/Word-of-mouth/Survey results
 - More Earth science is received by stakeholders/Attitudes
- Administrators
 - How do they support educator/How project demonstrates meeting the need?



#1 Quantitative/Qualitative Data

Indicators of Success*

Formal Education, **Informal Education**

- Families/Virtual Users/Community Groups
 - Level of engagement
 - Level of comfort [intuitive, frustration, ...]
 - Word-of-mouth communication
 - Survey Results
 - More Earth science is received by stakeholders



Reporting Tool

#2 Qualitative Data

Reporting Tool

What?

Highlight milestones, activities....
90-day Highlights

How?

NEEIS and/or Development of a simple tool

Why?

Program management for NASA
Marketing for Projects